DIVERSIFIED AGRICULTURE
(CIP: 01.0301)

Occupational Skills

The Student demonstrates the specified level of competency in occupational skills:

0	1	2	3	4
No Exposure	**Introduced**	**Practiced**	**Entry-level**	**Competency**

DIVERSIFIED AGRICULTURE

θθθθθ **A. Review Vermont Agriculture and Forestry**
(Vermont Standards: 1.3, 1.19, 2.7, 3.8, 6.4, 6.9, 6.14, 6.17)

θθθθθ **B. Apply Safety Knowledge**
(Vermont Standards: 1.2, 1.13, 2.1, 3.3, 3.5, 7.11)

θθθθθ **C. Understand the Impact of Agriculture on the Water Resources of Vermont**
(Vermont Standards: 1.13, 1.14, 1.19, 2.2, 3.7, 7.13, 7.16, 7.17, 7.18)

BUSINESS MANAGEMENT

θθθθθ **A. Evaluate Agriculture Enterprises**
(Vermont Standards: 1.6, 1.16, 2.2, 3.8, 3.12, 7.10, 7.17, 7.18)

θθθθθ **B. Develop a Business Plan**
(Vermont Standards: 1.22, 2.11, 6.18, 7.6, 7.17)

θθθθθ **C. Finance a Business**
(Vermont Standards: 1.15, 3.8, 7.6)

θθθθθ **D. Manage Finances and Records**
(Vermont Standards: 1.3, 2.2, 7.6, 7.18)

θθθθθ **E. Analyze Contracts, Leases, and Other Legal Documents**
(Vermont Standards: 1.3, 2.2, 5.18)

θθθθθ **F. Use Sources of Information and Assistance**
(Vermont Standards: 1.3, 3.15)

θθθθθ **G. Manage Machinery, Equipment and Labor**
(Vermont Standards: 2.2, 3.8, 7.10)

θθθθθ **H. Apply Computer Technology**
(Vermont Standards: 2.11)

MARKETING

θθθθθ **A. Identify Marketing Options**
(Vermont Standards: 1.1, 4.2, 6.16)

θθθθθ **B. Analyze Merchandising Components**
(Vermont Standards: 2.14, 4.1, 6.17, 6.18)

θθθθθ **C. Interpret State and Federal Rules, Regulations, and Assistance for Various Enterprises**
(Vermont Standards: 3.15, 6.19)

θθθθθ **D. Process Products**
(Vermont Standards: 2.1, 2.2, 3.7, 3.15, 7.2, 7.6, 7.13, 7.17)

ANIMAL SCIENCE SPECIALIZATION

θθθθθ **A. Select Livestock**
(Vermont Standards: 1.18, 3.7, 3.15, 7.13)

θθθθθ **B. Breed Livestock**
(Vermont Standards: 1.22, 2.2, 3.7, 7.18)

θθθθθ **C. Feed Livestock**
(Vermont Standards: 1.19, 2.2, 3.7, 7.2, 7.6, 7.17)

θθθθθ **D. Manage Livestock Health**
(Vermont Standards: 1.3, 2.2, 3.7, 7.11, 7.13)

θθθθθ **E. Fit, Show, and Exhibit Livestock**
(Vermont Standards: 1.15, 2.1, 3.12)

PLANT SCIENCE SPECIALIZATION

θθθθθ **A. Manage the Soil**
(Vermont Standards: 1.8, 3.15, 7.1, 7.18)

θθθθθ **B. Prepare Soil for Planting Crops**
(Vermont Standards: 2.1, 7.2)

θθθθθ **C. Plant Crops**
(Vermont Standards: 1.8, 7.10)

θθθθθ **D. Fertilize Plants and Crops**
(Vermont Standards: 1.19, 2.2, 7.11)

θθθθθ **E. Irrigate Plants and Crops**
(Vermont Standards: 2.2, 7.7)

θθθθθ **G. Manage Insects, Diseases, Weeds, and Other Plant Pests**

(Vermont Standards: 1.3, 2.2, 7.13)

θθθθθ **H. Harvest Crops**
(Vermont Standards: 3.10, 3.14, 7.18)

MECHANICAL SCIENCE SPECIALIZATION

θθθθθ **A. Perform Construction and Repair of Agricultural Facilities**
(Vermont Standards: 2.2, 3.11, 7.6, 7.10, 7.11)

θθθθθ **B. Select, Operate, and Service Small Gasoline Engines**
(Vermont Standards: 2.1, 5.5, 7.6, 7.7, 7.10, 7.12)

θθθθθ **C. Operate and Maintain Agricultural Tractors**
(Vermont Standards: 3.5, 3.14, 7.6, 7.18)

θθθθθ **D. Perform Basic Arc Welding Operations**
(Vermont Standards: 2.2, 7.7, 7.10, 7.12)

θθθθθ **E. Perform Oxy-fuel Cutting and Welding Operations**
(Vermont Standards: 2.2, 7.10, 7.11, 7.12)

SMALL WOOD LOT MANAGEMENT SPECIALIZATION

θθθθθ **A. Prepare Wood Lot Management Plan**
(Vermont Standards: 2.1, 3.5, 3.11, 3.15, 7.7, 7.10, 7.11, 7.18)

θθθθθ **B. Perform Woods Road Layout and Best Management Practices**
(Vermont Standards: 2.2, 3.10, 7.7, 7.8, 7.10, 7.17)

θθθθθ **C. Protect the Woodlot**
(Vermont Standards: 2.2, 7.13)

DIRECTIONS

Evaluate the student by checking the appropriate box to indicate the degree of competency. The rating for each competency should reflect employability readiness rather than the grades given in class.

Rating Scale:

0	**No Exposure**
1	**Introduced –** The student has been exposed through non-participatory instruction (e.g., lecture, demonstration, field trip, video).
2	**Practiced –** The student can perform the task with direct supervision.
3	**Entry-Level Competency –** The student can perform the task with limited supervision and/or does not perform the task to standard (a typical entry-level performance expectation).
4	**Competency –** The student consistently performs task to standard with no supervision (on at least two occasions or at instructor's option).

DIVERSIFIED AGRICULTURE

Fundamentals of Diversified Agriculture

0 1 2 3 4

θθθθθ **A. Review Vermont Agriculture and Forestry**

*A.001 Identify major changes with agriculture and forestry from the Revolutionary War to the present.
*A.002 Explain cause for changes.

θθθθθ **B. Apply Safety Knowledge**

*B.001 Define specific safety terms.
*B.002 Demonstrate the use of proper clothing, safety glasses, aprons, shield, ear protection, and other safety equipment.
*B.003 Recognize any unsafe working conditions and practices and report them to a supervisor.
*B.004 Demonstrate knowledge of proper hazardous material handling and disposal procedures, in accordance with state and federal rules and regulations ("Right to Know" regulations, etc.).
*B.005 Know the importance of safety rules (horseplay, hazards, misuse of equipment, etc.).
*B.006 Maintain a clean, safe workstation
*B.007 Demonstrate knowledge of proper emergency procedures (fire, illness, accident; basic first aid/CPR, etc. are desirable skills).

θθθθθ **C. Understand the Impact of Agriculture on the Water Resources of Vermont**

*C.001 Determine sources and uses of water.
*C.002 Identify the major water quality and pollution problems in Vermont.
*C.003 Identify chemical and physical properties of water.
*C.004 Explain bacteriology of water.
*C.005 Be familiar with acceptable management practices for maintaining water quality.

BUSINESS MANAGEMENT

θθθθθ **A. Evaluate Agriculture Enterprises**

*A.001 Define Diversified Agriculture.
*A.002 Establish business goals.
*A.003 Identify livestock and plant growing operations in the region.
*A.004 Compare different production systems.

θθθθθ **B. Develop a Business Plan**

*B.001 Prepare a resource inventory.
*B.002 Prepare a resource use plan.
*B.003 Develop a budget.
*B.004 Develop an enterprise plan.
*B.005 Describe role of use value appraisal program.

θθθθθ **C. Finance a Business**

*C.001 Identify sources of credit.
*C.002 Prepare a case for obtaining credit.

θθθθθ **D. Manage Finances and Records**

*D.001 Select and maintain financial and production record keeping systems.
*D.002 Prepare a cash flow statement.
*D.003 Calculate and analyze the periodic statements of financial condition.
*D.004 Complete a profit and loss statement.
*D.005 Balance a bank statement.
*D.006 Calculate cost efficiency factors.
*D.007 Identify agencies assisting and/or regulating businesses.
*D.008 Review tax documents.
*D.009 Review needs and sources of insurance.

θθθθθ **E. Analyze Contracts, Leases, and other Legal Documents**

*E.001 Identify major elements in contracts and lease agreements
*E.002 Read and interpret land use regulations.
*E.003 Develop business agreements.

θθθθθ **F. Use Sources of Information and Assistance**

*F.001 Identify sources of information and assistance.
*F.002 Maintain a file of current technical information.
*F.003 Participate in associations and societies related to business enterprises.

θθθθθ **G. Manage Machinery, Equipment, and Labor**

*G.001 Determine equipment, machinery, and labor requirements for the operation.
*G.002 Evaluate machinery and equipment acquisition by purchase, lease, or custom hire.
*G.003 Compare cost, efficiency, and maintenance requirements of various models and makes of equipment and machinery.

θθθθθ **H. Apply Computer Technology**

*H.001 Identify computer software and hardware.
*H.002 Select and use appropriate computer applications.

MARKETING

θθθθθ **A. Identify Marketing Options**

*A.001 Explain the role of supply and demand in the price system.
*A.002 Evaluate direct retail, wholesale, and cooperatives markets.
*A.003 Demonstrate futures market options.

θθθθθ **B. Analyze Merchandising Components**

*B.001 Examine consumer characteristics
*B.002 Identify product image.
*B.003 Develop an advertising program.

*B.004 Develop a quality control program.
*B.005 Evaluate alternative pricing methods.
*B.006 Identify customer services needs.
*B.007 Identify marketing information needs and sources.
*B.008 Develop a marketing budget.
*B.009 Conduct and close a sale.
*B.010 Market products.
*B.011 Identify Vermont Department of Agriculture Promotion Board's role in Marketing.
*B.012 Analyze costs and returns from marketing.

θθθθθ **C. Interpret State and Federal Rules, Regulations, and Assistance for Various Enterprises**

*C.001 List agencies responsibilities for inspecting, regulating, and promoting various products.
*C.002 Secure necessary inspections, certificates, and registrations.
*C.003 Maintain a file of current regulations.

θθθθθ **D. Process Products**

*D.001 Identify plant and animal products ready for market.
*D.002 Identify jobs in the food and fiber chain.
*D.003 Perform a processing operation.

A student may take one or more of the following areas of specialization: Animal Science, Plant Science, Mechanical Science, and Small Wood Lot Management.

ANIMAL SCIENCE

θθθθθ **A. Select Livestock**

*A.001 Select livestock suited for a particular enterprise.
*A.002 Evaluate an animal for characteristics that will promote longevity and profitability.
*A.003 Evaluate production/performance records and pedigrees.
*A.004 Develop a plan or standard for culling animals.

θθθθθ **B. Breed Livestock**

*B.001 Evaluate methods of livestock breeding.
*B.002 Understand the normal reproductive cycle of animals.
*B.003 Identify and describe function of female and male reproductive systems.
*B.004 Develop a program for keeping livestock reproductive records.
*B.005 Know the "signs" of heat and be able to use a heat expectancy chart and gestation table.
*B.006 Recognize birthing problems that require assistance for the animal.

θθθθθ **C. Feed Livestock**

*C.001 Determine nutritional needs of livestock.
*C.002 Evaluate, compare, and select concentrate and forage materials for nutritional value and least cost.
*C.003 Understand the digestive process of ruminants and non-ruminants.
*C.004 Balance a feed ration.
*C.005 Prepare a feeding schedule.

θθθθθ **D. Manage Livestock Health**

*D.001 Recognize a healthy animal.
*D.002 Identify common diseases, pests, and injuries.
*D.003 Be familiar with common methods of animal restraint.
*D.004 Trim or remove hooves, tails, beaks, horn, etc.
*D.005 Develop a herd health program.
*D.006 Identify environmental conditions that effect animal health and safety.

θθθθθ **E. Fit, Show, and Exhibit Livestock**

*E.001 Feed animal for showing.
*E.002 Train animals.
*E.003 Clip and groom livestock for show.
*E.004 Exhibit and show livestock.

PLANT SCIENCE

θθθθθ **A. Manage the Soil**

*A.001 Identify soil and site characteristics.
*A.002 Relate soil and site characteristics to crops.
*A.003 Develop a crop rotation plan.
*A.004 Secure and read a soils map.
*A.005 Obtain a soil sample for testing.
*A.006 Interpret of soil test and make recommendation.

θθθθθ **B. Prepare soil for Planting Crops**

*B.001 Select site for planting.
*B.002 Evaluate tillage systems and equipment.
*B.003 Prepare a seed bed.
*B.004 Perform field adjustments of tillage equipment.
*B.005 Apply fertilizer and lime.

θθθθθ **C. Plant Crops**

*C.001 Explain differences between sexual and vegetative propagation and demonstrate each method.
*C.002 Outline the process of mitosis.
*C.003 Explain genetics of crop breeding; advantages and disadvantages.
*C.004 Select high quality seed and transplants.
*C.005 Calculate seeding of transplant rates.
*C.006 Determine best practices for planting
*C.007 Perform field adjustments to planters and/or transplanters.
*C.008 Plant seeds and transplants.

θθθθθ **D. Fertilize Plants and Crops**

*D.001 Compare sources and forms of plant nutrients.
*D.002 Calculate application rate for required plant nutrients.
*D.003 Determine best practices of applying plant nutrient materials.
*D.004 Calibrate fertilization equipment.
*D.005 Interpret information on a fertilizer label.
*D.006 Apply fertilizer and lime
*D.007 Identify common nutrient deficiency symptoms in plants.
*D.008 Clean and store fertilization equipment.

θθθθθ **E. Irrigate Plants and Crops**

*E.001 Identify plant needs for water.
*E.002 Identify available sources of water.
*E.003 Discuss concept of soil water measurement.

θθθθθ **G. Manage Insects, Diseases, Weeds, and Other Plant Pests**

*G.001 Identify common pests and diseases, and weeds for local crops.
*G.002 Evaluate current pest control practices.
*G.003 Apply integrated pest management practices.
*G.004 Select appropriate pest control practices and pesticide application equipment.
*G.005 Operate, calibrates, and maintains pesticide application equipment.

*G.006 Clean and store pesticide equipment.
*G.007 Recognize symptoms of pesticide poisoning and apply first aid.
*G.008 Identify proper disposal of pesticides.

θθθθθ **H. Harvest Crops**

*H.001 Identify optimum stages of maturity.
*H.002 Measure moisture content of crops for storage.
*H.003 Estimate yield of crop to be harvested.
*H.004 Determine kind and type of storage facilities for crops.
*H.005 Operate, adjusts, and maintains harvesting equipment.
*H.006 Evaluate nutritional value of crops.
*H.007 Grade and sort harvested crops.
*H.008 Pack and store harvested crops.

MECHANICAL SCIENCE

θθθθθ **A. Perform Construction and Repair of Agriculture Facilities**

*A.001 Build, repair fences, gates, and pens.
*A.002 Select and use wood fasteners.
*A.003 Form and pour concrete.
*A.004 Preserve and maintain facilities.
*A.005 Install and maintain electric wiring and equipment.
*A.006 Install and maintain plumbing components and equipment.

θθθθθ **B. Select, Operate, and Service Small Gasoline Engines**

*B.001 Choose the correct motor or engine for the job.
*B.002 Perform routine maintenance on a motor or engine.
*B.003 Diagnose the cause of engine or motor failure.
*B.004 Mix fuel, refuel small gas engines.
*B.005 Identify motor/engine lubrication specifications and requirements.

θθθθθ **C. Operates and Maintain Agriculture Tractors**

*C.001 Perform scheduled maintenance and safety checks as prescribed in the operator's manual.
*C.002 Attach implements to tractor.
*C.003 Operate tractor safety on the road and in the field.

θθθθθ **D. Perform Basic Arc Welding Operations**

*D.001 Inspect electrical and wiring capacity.
*D.002 Set up arc welding tools, supplies, and safety equipment.
*D.003 Select electrode, amperage, and polarity.
*D.004 Prepare metal and make: a) a butt weld, b) a fillet weld, c) a vertical up and down weld, d) a horizontal weld, and e) an overhead weld.
*D.005 Cut metal
*D.006 Maintain and store arc welding equipment and supplies.

θθθθθ **E. Perform Oxy-Fuel Cutting and Welding Operations**

*E.001 Set up, adjust, and operate oxy-fuel cutting and welding equipment.
*E.002 Demonstrate use of safety equipment and procedures.
*E.003 Cut and pierce metal using the torch.
*E.004 Weld with oxy-fuel equipment.
*E.005 Maintain and store oxy-weld equipment and supplies.

SMALL WOOD LOT MANAGEMENT

θθθθθ **A. Prepare Wood Lot Management Plan**

*A.001 Divide the wood lot into management areas.
*A.002 Take a sample plot.
*A.003 Calculate volume of standing timber.
*A.004 Mark trees to be cut.
*A.005 Develop a multiple-use plan.

θθθθθ **B. Perform Woods Road Layout and Best Management Practices**

*B.001 Apply soil erosion prevention practices.
*B.002 Review Vermont Acceptance Management Practices booklet.
*B.003 Locate roads and skid trails.
*B.004 Locate drainage structures.

θθθθθ **C. Protect the Wood Lot**

*C.001 Identify wood lot insects, damage, and control methods.
*C.002 Identify wood lot tree diseases, damage, and control methods.
*C.003 Develop an integrated pest management plan.